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A radio talk by Dr. Albert C. Hunter, Food, Drug and Insecticide Administration, delivered through WRC and 34 other radio stations associated with the National Broadcasting Company, Tuesday, June 17, 1930.

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I suppose that many of you who are listening this afternoon usually think of bacteria in connection with sickness and the spread of disease. This is natural since we hear much about so-called microbes and contagion, personal hygiene, and the prevention of disease. But there are many kinds of microbes which do not produce disease yet which are very important to us economically. Before I talk about these microbes let me say that, in addition to the other specialists comprising the personnel of the Food and Drug Administration there are a number of bacteriologists whose duty it is to make certain that your food supply is free from filth, decomposition and destructive and harmful bacteria. I want to tell you how these bacteriologists are working to protect your food supply.

Now from the viewpoint of the food bacteriologists germ life may be divided roughly into three groups. Our first group consists of a large number of microbes which are beneficial to mankind. You know pickles, sauerkraut, and some varieties of cheese are produced through fermentation by bacteria. Acidophilus milk of which we hear much nowadays is really a culture of certain bacteria.

Our second group of bacteria is composed of organisms which are harmful or destructive. In this group we include germs which cause poisoning and disease and those which rot or sour our food making it unfit for use.

Between these two extremes there are hundreds of kinds of bacteria which play no part in food production, poisoning or spoilage. Later I will explain the significance of this group of bacteria in our foods.

Now let us discuss the first group and see what application the pure food law has in considering these beneficial microbes. For the purpose of illustration I am selecting for this discussion the bacteria used in producing fermented milk. The product known as acidophilus milk is claimed by many to be helpful in the treatment of intestinal ailments. It is produced by growing in milk bacteria of a certain type. Its beneficial effect is claimed to be due to the growth of these bacteria in the human intestines where they combat the poisons produced there by the microbes which ordinarily inhabit the digestive tract. Various other preparations containing acidophilus bacteria are offered for sale to the public. You know that the food and drugs act requires that products shall be truthfully labeled and the labels shall bear no false or fraudulent medicinal claims. Bacteriologists in the Food and Drug Administration frequently examine acidophilus milk and similar preparations to ascertain whether these products actually contain true acidophilus bacilli and, if so, whether sufficient numbers of living microbes of that type are present. Whenever shipments of such products are encountered which contain numbers of bacteria less than claimed action is taken under the powers granted in the pure food law to remove such preparations from the market. In this case the bacteriologist is at your service to see that you obtain what you may reasonably expect when you buy acidophilus

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milk or other acidophilus preparations.

Now we may turn to that large group of harmful or destructive bacteria which claims the greater amount of the attention of the bacteriologists in the Food and Drug Administration. Illustrations of activities with these types of bacteria are multiple but I am going to select a few as representative. Let us talk about that great class of food stuffs preserved in tin or glass, known as "canned goods." Almost every variety of food can be purchased nowadays in cans or jars. Most of these foods owe their preservation to the fact that they are sterilized by heat. By sterilized I mean that all the bacteria in the raw product are killed by the canning process. If the cooking process is inadequate or the microbes present are unusually resistant to heat bacteria will survive and grow in the sealed cans and cause spoilage. Since the very existence of the canning industry depends upon the keeping quality of its output we ordinarily find that canned foods contain no living bacteria. But what of those inadequately processed lots of canned foods which contain bacteria causing decomposition? It is the duty of the Food and Drug Administration to detect such lots when shipped in interstate commerce and the function of the bacteriologist to determine the presence of the living bacteria and the decomposition of the food. When bacteria causing putrefaction of food are active in sealed containers the cans become swollen on the ends. I am sure that all of you understand that foods from swollen cans should never be used. Examination by bacteriologists of the Food and Drug Administration of cans from inadequately processed shipments determines what types of bacteria are present and what action should be taken to prevent distribution of such a lot of food.

In canned foods we also have what is familiarly known as "flat-sours." Flat-sours are found in products which are normally neutral to the taste and are evidenced by a sour taste or odor with no swelling of the container. This condition is caused by definite types of bacteria which are not easily killed by heating. Flat sour canned foods are classed as decomposed by the Food and Drug Administration and their sale is prohibited by the pure food law. It is a function of the bacteriologist to examine canned food for the presence of this form of decomposition and to study the bacteria responsible for it.

Bottled spring and mineral waters are another class of products demanding attention from the bacteriologist. When bacteria indicating filth or danger to health are found action is promptly taken to remove the water from the market.

Up to this point I have said little about bacteria which are harmful to health. Now for a few words about them - they certainly are important and are outlaws whenever they are found. Since all foods during handling must come in contact with bacteria there is always a possibility, although a remote probability, that disease producing microbes may gain access to them. There is no need to be alarmed because it is possible to prevent access to harmful bacteria to our food and such prevention is more evident today than ever before. Milk, water, shellfish and some other foods eaten raw have been incriminated in the spread of typhoid fever and other diseases. This is prevented by the adoption of up to date sanitary methods in the preparation of these products and as an added precaution by pasteurization of milk, chlorination of water, by growing shellfish only in clean water; also in generally improved methods of food handling.

Certain kinds of foods have carried bacteria causing food poisoning. This can be prevented. Pamphlets issued by the Food and Drug Administration giving directions for avoiding food poisoning are available if you care to write and ask for them. The dreaded botulinus organism about which we have heard so much is an outstanding outlaw and much time, thought and money have been expended in the battle against it. It is not the menace now that it was once.

In the examination of all food samples the bacteriologist considers the possibility of microbes which are dangerous to health. When such bacteria are found the machinery is immediately started to confiscate and destroy the incriminated food.

Earlier I mentioned a group of bacteria which do not spoil food and do not cause sickness. The food bacteriologist nevertheless, may not disregard these organisms. Since canned foods should be free from all bacteria the presence of even these harmless germs indicates either that the food has been improperly processed or that the cans are defective. When present in food handling establishments or in certain food itself they may indicate insanitary methods. In many foods though they have no particular significance.

I stated in the beginning of this talk that I am afraid that there is a widespread belief that all bacteria are injurious to health. It is my desire to contradict this theory if it does exist. Bacteria are everywhere. Comparatively few types are dangerous to health and only a few other types are destructive of our food supply. Let there be no apprehension concerning the numbers of bacteria which you inevitably swallow during the day. You know the human digestive tract contains many bacteria and if they remain in their proper place and behave themselves they do you no harm. The harmful bacteria and the destructive bacteria are enemies of man and when they occur in foods they become outlaws under our pure food law. It is the duty of the bacteriologists of the Food and Drug Administration (and they are fully conscious of their responsibilities) to hunt for the harmful and destructive microbes, study and classify them, and to recommend action under the food and drugs act which will result in a safe and sound food supply.

